Experimental 9x9 to 20x20 Petrus Method – A Logical Alternative to Reduction

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"Petrus Method Experimentally Applied to Big Cubes by: Shridarshan Mishra"

Overview

The **Petrus Block Method** is a solving method traditionally applied to 3x3 cubes, originally designed to reduce move count and promote intuitive solving. This document presents a **rare experimental adaptation** of the Petrus philosophy applied to **very large cubes (9x9 to 20x20)**. Rather than using the standard reduction method, this approach constructs the cube progressively by building logical blocks — much like constructing a puzzle from the inside out.

This method emphasizes **creative problem-solving** and **spatial reasoning**, making it a rich intellectual challenge. As of today, this technique is practiced and refined primarily by its author, **Shridarshan Mishra**, who has successfully applied it to cubes up to 20x20.

History of the Petrus Method

- **Invented by:** Lars Petrus
- **Year:** Early 1980s
- **Original Use:** 3x3x3 solving
- **Core Philosophy:** Build a small logical block and expand outward, minimizing reliance on layer-based structure.
- **Impact:** Became a foundation for many intuitive and efficient 3x3 solves, and inspired generations of advanced solving techniques.

Applying Petrus Philosophy to 9x9 and Above

Key Concept:

Solve the cube by **gradually expanding a logically consistent block**, starting from a 1x1x1 corner, instead of solving centers and edges separately as in the reduction method.

📓 Step-by-Step Process:

1. Start with a 1x1x1 Block

- Solve a single corner piece and its corresponding center colours.
- This establishes your spatial anchor point.

2. Expand to 2x2x2 and 2x2x3

- Extend from the corner by solving connected edges and centers.
- Work logically, not layer-by-layer — focus on relationships between connected pieces.

3. Continue Expanding Up to 8x8 Block

- Maintain structure as you grow your block.
- Carefully insert surrounding centers and edges without disturbing the core.
- This requires **advanced piece tracking** and **reverse-engineering insertion paths**.

4. Solve Remaining Cube

- Once 80–90% of the cube is filled, finish with intuitive pattern-solving.
- If required, use selective reduction (centers/edges) only for isolated pieces.

🧩 Optional Techniques and Tips

- ✔ Start with **colour-neutral anchors** for flexibility.
- ✔ Use **commutators** to insert tricky pieces late-stage.
- ✔ Practice visualizing blocks as "zones of control" within the cube.
- ✔ Think of the solve like constructing a building — ground up, logically.
- ✔ When solving 15x15 or 20x20, consider breaking down the cube into **sections** of local block building.

🚀 Comparison to Traditional Reduction Method

Feature	Traditional Reduction	Experimental Petrus Block Method
Solving Order	Centers → Edges → 3x3	Block expansion from 1x1
Speed	Very fast (used in competition)	Slower but highly logical
Move Count	High overall	Potentially lower, depending on efficiency
Logical Depth	Medium	Extremely high
Memorization	Algorithms and parity sequences	Mostly intuitive with custom logic
Usage	Almost universal	Very rare on big cubes

🌍 Real-World Relevance and Use

This method is not widely used in competitions due to time constraints, but it holds strong **educational and cognitive value**:

- ✅ Trains **logical thinking** and **problem decomposition**
- ✅ Useful for **cubing instructors or workshops** teaching spatial reasoning
- ✅ Can be used to develop **hybrid methods** that balance intuition with structure

As of now, this technique has **not been documented or standardized** by any speedcubing federation or method archive — making it a **truly unique contribution** by Shridarshan Mishra.

For your more clarification Here are some step wise step images of solving 9 by 9 cube with Petrus Method-

Step 1 – Choose one corner piece (1 by 1 by 1)

Starting with red, blue and white corner piece.

Step 2 – Now, expanding this corner piece.

(2 by 2 by 2) block

Step 3- expanding this (2 by 2 by 2 block)

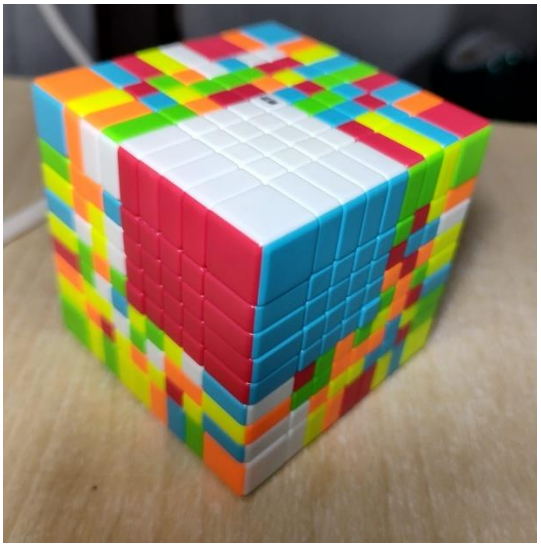
Into (2 by 2 by 3) block

Step 4- (3 by 3 by 2 block)

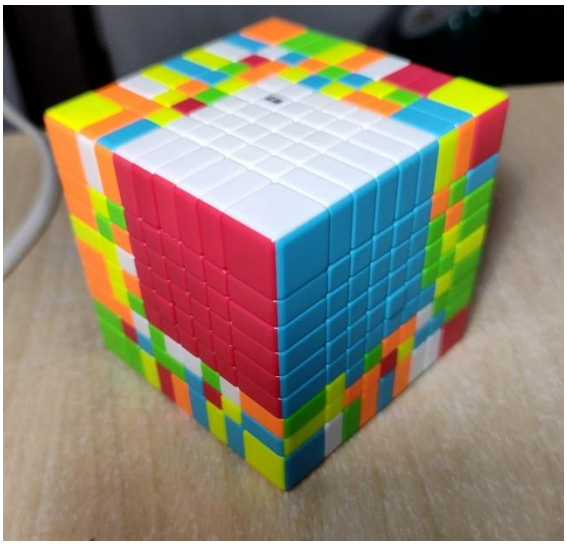
Step 5- (3 by 3 by 3) block

Step 6- (4 by 4 by 4) block

Step 7- (5 by 5 by 5) block

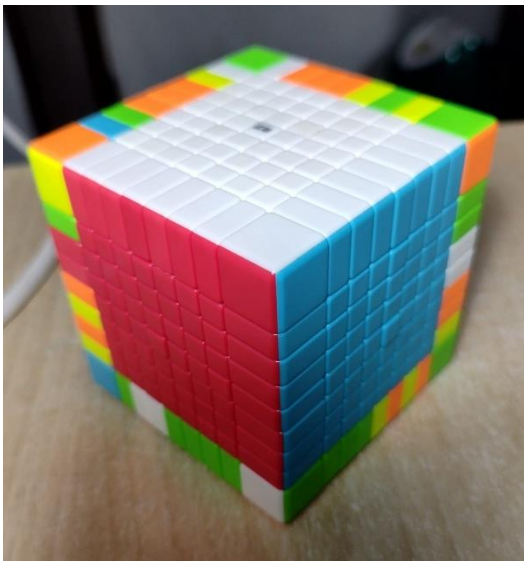


Step 8- (6 by 6 by 6) block



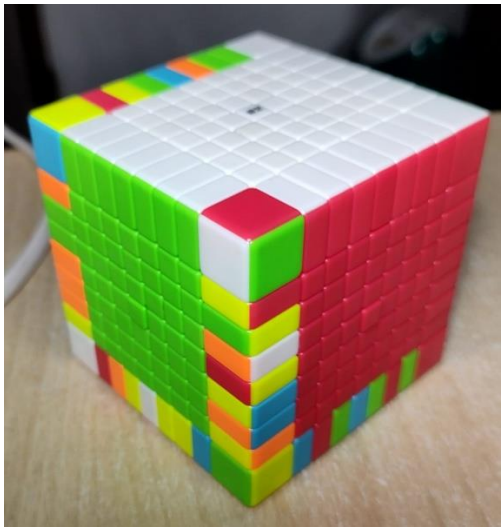
Step 9- (7 by 7 by 7) block

Step 10- (8 by 8 by 8)block



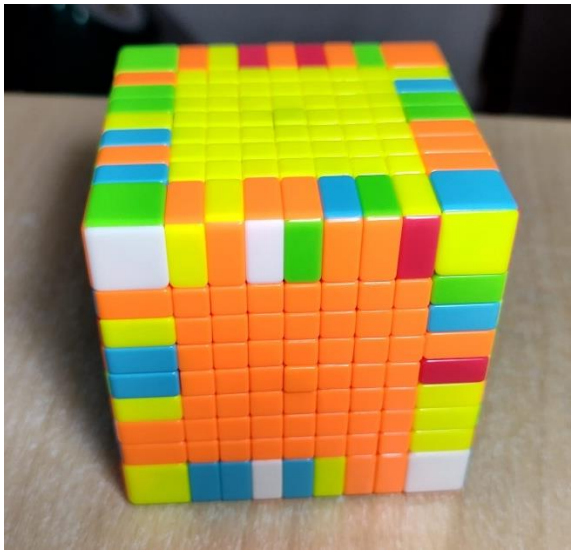
Step 11- Making 4th center

Step 12- Making cross colour edge



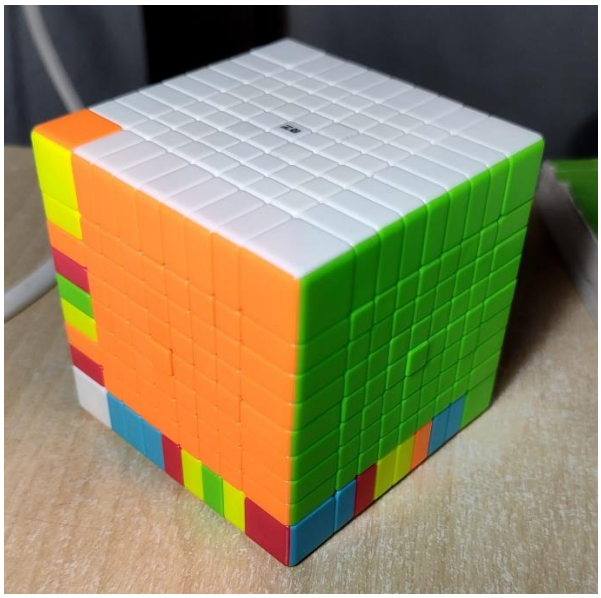
Step 13- (8 by 8 by 9) block

Step 14- Make remaining two center

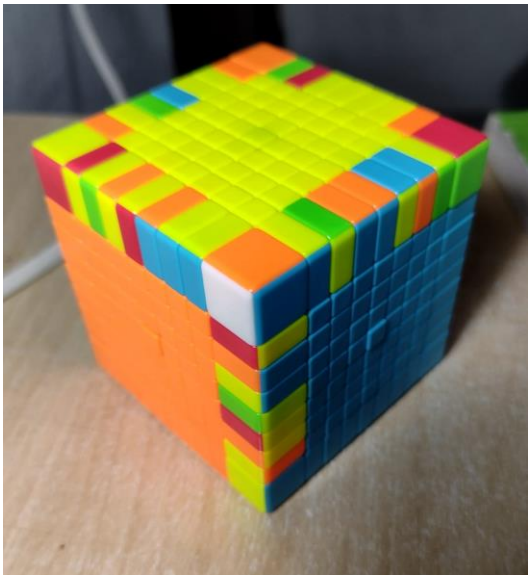


Step 15- Make 4th cross edge and attached it to its center(white)

Step 16- Attach one F2L pair

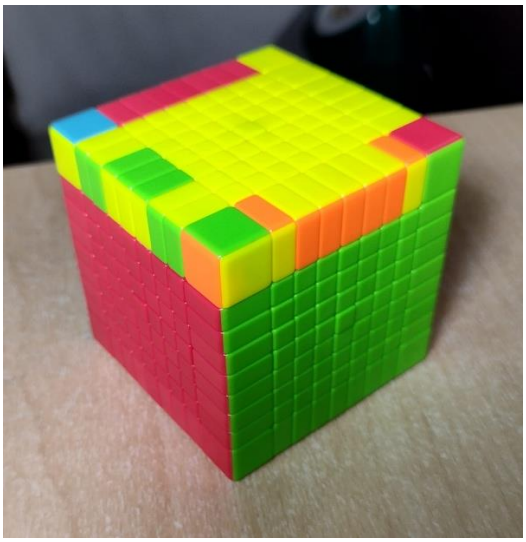


Step 17- now we have remaining 5 edges

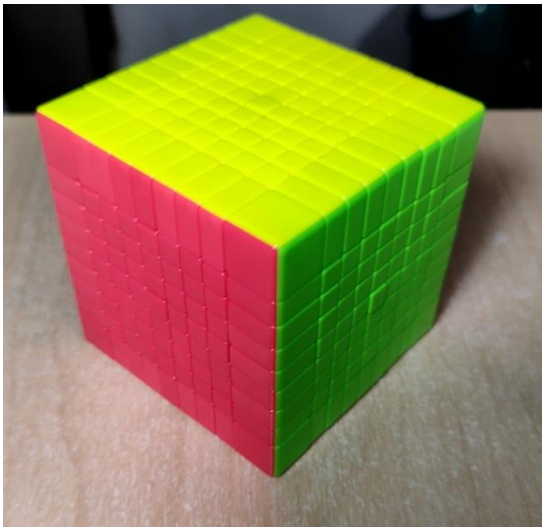


Step 18- (9 by 9 by 8) block, last 4 edges

Step 19- Edge parity and last layer 3 by 3 stage



Step 20- solved (9 by 9 by 9) block



The most complex part-

1) Making blocks (I have made blocks without using any commutator, used raw logic which makes it more difficult).

2) Last 4 edges stage (it can be done if you have a good understanding about edges).

🎯 Final Thoughts

If you're able to solve large cubes (9x9 to 20x20) using this method, you are engaging with the cube on a **deeply logical and structural level**, far beyond casual speedsolving.

This is more than a method — it's a mindset. It brings together creativity, patience, and spatial intuition into a single solving experience.

So, this method is specially for 3 by 3 cube, but it can be applicable in big cubes also.

This method is only for advance solvers.

To anyone attempting this path: welcome to the frontier of cubing innovation.